

# An analysis of the regional characteristics of diagnosis and treatment of osteoarthritis of the knee in the orthopedic schools of traditional Chinese medicine in the north and south of China

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**Abstract:** Knee osteoarthritis is a disease that causes chronic damage to the joint to cause swelling, pain, and dysfunction of the knee joint. Knee osteoarthritis belongs to the category of "arthralgia" and "bone arthralgia" in traditional Chinese medicine. Chinese traditional Chinese medicine has had profound and unique insights on the understanding of knee osteoarthritis and the treatment of diseases since ancient times. The differences in geographical environment make different schools of Chinese medicine in China emerge, and the founders and inheritors of various schools of Chinese medicine also put forward different therapeutic ideas and measures for knee osteoarthritis. The author summarizes the research progress of the treatment characteristics of knee osteoarthritis in the north and southern TCM schools, in order to provide basis for the choice of TCM clinical treatment of knee osteoarthritis.

**Keywords:** Knee osteoarthritis; Chinese medicine treatment; Schools of Chinese medicine

## 1. Introduction

Osteoarthritis of the knee (OAK) is a bone and joint disease characterized by swelling, chronic pain, stiffness and limitation of movement in the knee <sup>[1]</sup>, and the knee joint bears a large amount of gravity, so it is easily inflamed <sup>[2]</sup>. About 300 million people suffer from osteoarthritis of the knee worldwide<sup>[3]</sup>, and in China, the prevalence of KOA is as high as 85% in people older than 65 years old <sup>[4]</sup>. In severe cases, KOA can deform the joints, affecting the patients' normal life, and causing great pressure on the family and society<sup>[5]</sup>.

KOA belongs to "paralysis" in Chinese medicine <sup>[6]</sup>. KOA first appeared in "Suwen - Paralysis", and its pathogenesis is mainly divided into intrinsic and extrinsic mechanisms<sup>[7]</sup>. In the north and south of China, the treatment ideas of KOA are different in different schools of Chinese medicine. This paper summarizes the clinical studies on the treatment of osteoarthritis of the knee by different schools of Chinese medicine in the south and north of China based on the natural geographic demarcation line of the Qinling-Huaihe River as the basis for the geographical division of the north and south.

## 2. Geographic differences and the emergence of North-South schools of Chinese medicine

Regionality is a very important characteristic for the formation and development of TCM and its academic schools<sup>[8]</sup>. The Qinling-Huai River is the natural demarcation line between the north and south of China<sup>[9]</sup> and there are differences in the natural environment and culture of each region <sup>[10]</sup>. In addition, there are also differences in the climate of the same region, forming the regional characteristics of diseases in different regions. Regional schools of Chinese medicine demonstrate the diversity of TCM diagnosis and treatment by elaborating on the morbidity trends and treatment characteristics of a certain region<sup>[11]</sup>. Geographical academic schools of Chinese medicine can lead to better development of Chinese medicine and promote further innovation of Chinese medicine academics<sup>[12]</sup>.

The development of academic schools of TCM is a landmark achievement of the Jin-Yuan period<sup>[13]</sup>. "The gateway of medicine was divided in Jin-Yuan", and in this period, the north and south medical schools were formed, which also made the later development of TCM schools form a basic framework<sup>[14]</sup>.

### **3. Treatment Characteristics of Northern School of Orthopedic Injury**

#### **3.1 Guanzhong Li's Academic School of Orthopedics and Traumatology**

Shaanxi Province is located in northwestern China, straddling the Qinling Mountains and the Loess Plateau. Guanzhong Li's academic school of orthopedics and traumatology is an important academic school of orthopedics and traumatology in Shaanxi, and the founder of the school is Prof. Sun Shaoliang, and the founder of the school is Prof. Li Kanyin<sup>[15]</sup>.

##### **3.1.1 Focus on the "combination of the three discriminations", and use rattan drugs skillfully**

KOA is most common in the elderly<sup>[6]</sup>. Prof. Li believes that we should follow the concept of "preventing disease before it occurs, and preventing change when it occurs". Early diagnosis and treatment are emphasized. Through the "three discriminations", The professor used different formulas to treat different types of symptoms, and pointed out that only by identifying the nature of the disease can the right medicine be prescribed, and also put forward the principle of "tonifying the kidneys and benefiting the qi" as the treatment method<sup>[16]</sup>. It is recorded in the Compendium of Materia Medica that "rattan medicines, with their lightness and flexibility, are easy to pass through the joints and reach the limbs." Rattan drugs can expel wind and remove dampness, activate blood circulation and remove blockages, and clear the channels and relieve pain<sup>[17]</sup>.

##### **3.1.2 Position-identifying and holistic treatment with needle and knife**

The Guanzhong Li's academic school of orthopedic injuries in Chang'an medicine focuses on the treatment of strong pressure points, and then the school has adopted the "identification and application of method, holistic treatment" as the core program<sup>[18]</sup>. Yu Hongchao<sup>[19]</sup> used this program to treat KOA, and the results showed that the improvement of various scores in the treatment group was also more obvious. The results showed that the improvement of the scores of the treatment group was also more obvious, indicating that this school of treatment has a better therapeutic effect.

#### **3.2 Chang'an Zhu's School of Orthopedic Trauma**

Chang'an Zhu's school of orthopedic injuries is a branch of the Chang'an school of medicine, which has achieved good therapeutic results in the treatment of cervical spondylosis and other diseases<sup>[20]</sup>. The school is based on the clinical practice of "Zhu Xinggong". Zhu Xinggong was a native of Baoji, Shaanxi Province, and his ancestral secret prescription of "Spreading Tendon Dan", "Bone-setting Dan", "Hot Compress", and "Muscle-regenerating Powder" has achieved excellent results in the treatment of cervical spondylosis.

##### **3.2.1 Sinews and bones are given equal importance, and tendon management is the mainstay**

Chang'an Zhu's School of Bone Injury believes that the main pathogenesis of KOA is deficiency of liver, kidney, qi and blood, and the core concept of treatment is to "emphasize on both muscles and bones, and to regulate the tendons".

The study of Xin Rongchao et al<sup>[21]</sup> showed that the therapeutic effect of the treatment program using this school of special diagnostic and treatment program is better, and it is worth promoting.

##### **3.2.2 External use of traditional Chinese medicine "Zhu Sanbao"**

The treatment of Chang 'an Zhu's KOA is characterized by the traditional Chinese medicine "Zhu's Sanbao", Zhu's bone-setting technique and functional exercise, which is steamed and wrapped to the affected knee, and then wrapped with plastic film for lasting heat preservation. Relief of popliteal and twisted knee joints and functional exercise during the treatment.

#### **3.3 Tianchi School of Injury Medicine**

Formed in the Qing Dynasty, the Tianchi School of Injury Medicine combines the characteristics of different ethnic groups such as Manchus, Mongols, and Han Chinese, and is unique among the schools of medicine in the northern part of China<sup>[22]</sup>. Zhao Wenhai is the fourth-generation inheritor of the Tianchi School of Injury Medicine, whose guiding principle is "treating the kidneys as well as the bones", and whose therapeutic concept is "removing blood stasis eliminates paralysis".

### ***3.3.1 Adapt to local conditions and take into account phlegm, dampness and stasis***

Combined with the very cold characteristics of Tianchi in winter, the professor believed that activating blood circulation and removing blood stasis and activating meridians and collaterals were the most basic treatment principles<sup>[23]</sup>. He proposed to use “Angelica sinensis - Astragalus membranaceus - Wu Ling Lipid - leech” as the core 4-flavored medicine and Chuanxiong rhizome as the core medication method<sup>[23]</sup>.

### ***3.3.2 Skillful use of gong methods to stretch muscles and bones***

The professor also proposed a gong method that combines the elements of Taijiquan and Baduanjin that are useful for KOA to promote recovery from diseases. This gong method can make the muscles more flexible and coordinated, and also has a certain effect on the internal organs, thus promoting the health of the human body<sup>[24]</sup>.

## **4. Southern School of Orthopedic Trauma**

### ***4.1 Sichuan He School of Orthopedics***

He's orthopedics is one of the famous orthopedic schools in Sichuan, and the founder of its school is He Renfu<sup>[25]</sup>. This school believes that the treatment of KOA should tonify the liver and kidneys, strengthen the tendons and bones, dispel wind and cold and dampness, activate blood circulation to eliminate stasis, and clear the channels to alleviate pain, so as to treat the symptoms, and the symptoms and root cause of pain, in order to achieve a good therapeutic effect.

#### ***4.1.1 External treatments as the mainstay, supplemented by internal treatments***

Ho's Orthopaedics has a “external treatment as the mainstay, internal treatment as a supplement” method of medication, combining preparations, warmth and machinery to treat diseases, which can prevent damage to the spleen and stomach. Secondly, it also focuses on evidence-based treatment, using different medicines to apply heat according to different symptoms. The combination of the two drugs is used to treat osteoarthritis of the knee, and then He's manipulation is performed to promote blood flow<sup>[26]</sup>.

#### ***4.1.2 Localized identification, and the combination of medicine and evidence***

Ho's Orthopaedics advocates that the identification of symptoms corresponds to the use of medication. Considering that the symptoms of different parts of the body are different, He's Orthopaedics puts forward the “theory of medication for different parts of the body”, which gives targeted treatment programs for the different symptoms of different parts of the body at different times. For the anterior side of the knee joint, drugs to strengthen the tendons and bones are used, while for the lateral side of the knee joint, drugs to activate blood circulation and remove blood stasis, warm the channels and open the collaterals are used<sup>[27]</sup>.

### ***4.2 Southern Shaolin School of Orthopedics and Traumatology***

The Southern Shaolin School of Orthopaedic Injury is very influential in the Lingnan region<sup>[28]</sup>. Prof. Wang Homing is the head of the school's inheritance studio. “Zen,” “medicine,” and “martial arts” are the main features of the school<sup>[29]</sup>.

#### ***4.2.1 Fascia and Bone, Internal and External Treatments***

Wang Heming inherited the academic thinking of this school, which is mainly characterized by the combination of Zen, medicine and martial arts. “Zen” is ‘quiet’ and ‘martial arts’ is ‘dynamic’, which are used in the treatment of tendon injuries<sup>[30]</sup>. He also emphasized the holistic concept, the combination of movement and static, the importance of both bones and tendons, the balance between the local and the whole, and the treatment of both internal and external<sup>[31]</sup>. This school advocates the use of local needle and knife to achieve the purpose of harmonizing qi and blood and balancing the muscles and bones.<sup>[32]</sup>

#### ***4.2.2 Treatment on syndrome differentiation, promoting blood circulation and removing blood stasis***

The school of southern Shaolin makes good use of chuanwu and Caowu, which are effective and can reduce the incidence of adverse reactions. This is also a major feature of the school's use of external drugs.

### 4.3 Emei School of Injury Medicine

#### 4.3.1 Emphasis on local and whole

Emei School of Injury Therapy is the Intangible Cultural Heritage of Sichuan Province, the fifth generation of the school inheritor is Prof. Luo Caigui, who puts forward the academic idea of bone injury massage of "it suffers from the section, the section has the chapter, the slow and urgent, the rule of law is comparable".

#### 4.3.2 Emphasis on local and holistic, internal and external treatments

Tui na is an extensive non-pharmacological treatment for KOA, and this school proposes the characteristic techniques of "loosening, dividing, warming, and smoothing", emphasizing both local and holistic, internal and external treatments<sup>[33]</sup>. In this school, the characteristic techniques of "loosening" are rubbing, "dividing" are plucking and flicking, "warming" are rubbing and pressing, and "shun" are pushing and stroking. "to push and stroke" <sup>[34]</sup>.

## 5. Discussion

To sum up, these characteristic concepts and principles of treating schools have improved the treatment effect of knee osteoarthritis, and made patients have a better quality of life. This also shows that the core ideas and characteristic treatment of Traditional Chinese medicine in understanding, identifying and treating diseases are worth inheriting and popularizing, and providing help for clinical and scientific research.

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